********** STN Columbus **********
**

FILE 'HOME' ENTERED AT 09:04:49 ON 29 FEB 2000

=> file medline

COST IN U.S. DOLLARS SINCE FILE TOTAL
ENTRY SESSION
FULL ESTIMATED COST 0.15 0.15

FILE 'MEDLINE' ENTERED AT 09:04:54 ON 29 FEB 2000

FILE LAST UPDATED: 18 FEB 2000 (20000218/UP). FILE COVERS 1960 TO DATE.

OLDMEDLINE, data from 1960 through 1965 from the Cumulated Index
Medicus (CIM), has been added to MEDLINE. See HELP CONTENT for details.

Left, right, and simultaneous left and right truncation are available in the
Basic Index. See HELP SFIELDS for details.

THIS FILE CONTAINS CAS REGISTRY NUMBERS FOR EASY AND ACCURATE
SUBSTANCE IDENTIFICATION.

=> serum free media or serum free medium/ab,bi

SERUM IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
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=> s serum free media or serum free medium/ab,bi

'AB' IS NOT A VALID FIELD CODE
436337 SERUM
316301 FREE
158605 MEDIA
926 SERUM FREE MEDIA
(SERUM(W)FREE(W)MEDIA)
0 SERUM FREE MEDIUM/AB
436337 SERUM/BI
316301 FREE/BI
158635 MEDIUM/BI
5075 SERUM FREE MEDIUM/BI
((SERUM(W)FREE(W)MEDIUM)/BI)
L1 5870 SERUM FREE MEDIA OR SERUM FREE MEDIUM/AB,BI

=> s l1 and embryonic/ab,bi

'AB' IS NOT A VALID FIELD CODE
0 EMBRYONIC/AB
45970 EMBRYONIC/BI
L2 248 L1 AND EMBRYONIC/AB,BI

=> s l1 and embryonic stem/ab,bi

'AB' IS NOT A VALID FIELD CODE
0 EMBRYONIC STEM/AB
45970 EMBRYONIC/BI
85739 STEM/BI
1897 EMBRYONIC STEM/BI
((EMBRYONIC(W)STEM)/BI)
L3 2 L1 AND EMBRYONIC STEM/AB,BI

=> d 1- bib ab

YOU HAVE REQUESTED DATA FROM 2 ANSWERS - CONTINUE? Y/(N):y

L3 ANSWER 1 OF 2 MEDLINE
AN 1999370092 MEDLINE
DN 99370092
TI BMP-4 inhibits neural differentiation of murine ***embryonic*** ***stem*** cells.
AU Finley M F; Devata S; Huettner J E
CS Department of Cell Biology and Physiology and Program in Neuroscience,
Washington University Medical School, 660 South Euclid Avenue, St. Louis,
Missouri 63110, USA.
NC NS30888 (NINDS)
SO JOURNAL OF NEUROBIOLOGY, (1999 Sep 5) 40 (3) 271-87.
Journal code: JAM. ISSN: 0022-3034.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200002
EW 20000204
AB Members of the transforming growth factor-beta superfamily, including bone
morphogenetic protein 4 (BMP-4), have been implicated as regulators of
neuronal and glial differentiation. To test for a possible role of BMP-4
in early mammalian neural specification, we examined its effect on
neurogenesis in aggregate cultures of mouse ***embryonic*** ***stem*** (ES) cells. Compared to control aggregates, in which up to
20% of the cells acquired immunoreactivity for the neuron-specific
antibody TuJ1, aggregates maintained for 8 days in ***serum*** ***free*** ***medium*** containing BMP-4 generated 5- to 10-fold
fewer neurons. The action of BMP-4 was dose dependent and restricted to
the fifth through eighth day in suspension. In addition to the reduction
in neurons, we observed that ES cell cultures exposed to BMP-4 contained
fewer cells that were immunoreactive for glial fibrillary acidic protein
or the HNK-1 neural antigen. Furthermore, under phase contrast, cultures
prepared from BMP-4-treated aggregates contained a significant proportion
of nonneuronal cells with a characteristic flat, elongated morphology.
These cells were immunoreactive for antibodies to the intermediate
filament protein vimentin; they were rare or absent in control cultures.
Treatment with BMP-4 enhanced the expression of the early mesodermal genes
brachyury and tbx6 but had relatively little effect on total cell number
or cell death. Coapplication of the BMP-4 antagonist noggin counteracted
the effect of exogenous BMP-4, but noggin alone had no effect on
neuralization in either the absence or presence of retinoids.
Collectively, our results suggest that BMP-4 can overcome the neuralizing
action of retinoic acid to enhance mesodermal differentiation of murine ES
cells. Copyright 1999 John Wiley & Sons, Inc.

L3 ANSWER 2 OF 2 MEDLINE
AN 93191693 MEDLINE
DN 93191693
TI Fibroblast growth factor-mediated growth regulation and receptor expression in embryonal carcinoma and ***embryonic*** ***stem*** cells and human germ cell tumours.
AU Mummery C L; van Rooyen M; Bracke M; van den Eijnden-van Raaij J; van
Zoelen E J; Alitalo K
CS Hubrecht Laboratory, Netherlands Institute for Developmental Biology,
Utrecht.
SO BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, (1993 Feb 26) 191 (1)
188-95.
Journal code: 9Y8. ISSN: 0006-291X.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 199306
AB FGFs have been implicated in the induction of mesoderm in amphibian
development and are present in the mouse embryo at stages that would be

appropriate for a similar function in mammals. Primitive ectoderm would
then be the target tissue. We have now changes in the expression of
receptors for FGFs during the differentiation of embryonal carcinoma (EC)
and ***embryonic*** ***stem*** (ES) cells from the mouse. These
cells resemble those of the inner cell mass and later primitive ectoderm.
On Northern blots of mRNA from undifferentiated cells, transcripts for FGF
R1, R2 and R3 are expressed. All are upregulated during differentiation of
ES cells and are upregulated or remain constant as EC cells differentiate.
FGF R4 is only expressed after differentiation to derivatives resembling
parietal endoderm. By contrast in human EC cells, FGF R2 is downregulated
during differentiation, FGF R1 and FGF R3 are unchanged and FGF R4 is
expressed before and after differentiation. In both human and mouse EC
cells three members of the FGF family (a FGF, b FGF and k FGF, also known
as FGFs 1,2 and 4) are mitogenic in ***serum*** - ***free***
medium and one (KGF or FGF 7) appears to have no effect on growth
although cellular morphology is altered. Differences between human and
mouse cells are primarily in the effects of heparin on the FGF-induced
response.

=> file medline embase biosis inpadoc caplus

COST IN U.S. DOLLARS SINCE FILE TOTAL
ENTRY SESSION
FULL ESTIMATED COST 1.58 1.73

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=> d his

(FILE 'HOME' ENTERED AT 09:04:49 ON 29 FEB 2000)

FILE 'MEDLINE' ENTERED AT 09:04:54 ON 29 FEB 2000
L1 5870 S SERUM FREE MEDIA OR SERUM FREE MEDIUM/AB,BI
L2 248 S L1 AND EMBRYONIC/AB,BI
L3 2 S L1 AND EMBRYONIC STEM/AB,BI

FILE 'MEDLINE, EMBASE, BIOSIS, INPADOC, CAPLUS' ENTERED AT 09:07:07 ON 29
FEB 2000

=> s l3

'AB' IS NOT A VALID FIELD CODE
'AB' IS NOT A VALID FIELD CODE
'AB' IS NOT A VALID FIELD CODE
L4 15 L3

=> dup rem l4

PROCESSING COMPLETED FOR L4
L5 8 DUP REM L4 (7 DUPLICATES REMOVED)

=> d l- bib ab

YOU HAVE REQUESTED DATA FROM 8 ANSWERS - CONTINUE? Y/(N):y

L5 ANSWER 1 OF 8 MEDLINE DUPLICATE 1
AN 1999370092 MEDLINE
DN 99370092
TI BMP-4 inhibits neural differentiation of murine ***embryonic***
stem cells.
AU Finley M F; Devata S; Huettner J E
CS Department of Cell Biology and Physiology and Program in Neuroscience,
Washington University Medical School, 660 South Euclid Avenue, St. Louis,
Missouri 63110, USA.
NC NS30888 (NINDS)
SO JOURNAL OF NEUROBIOLOGY, (1999 Sep 5) 40 (3) 271-87.
Journal code: JAM. ISSN: 0022-3034.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200002
EW 20000204
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morphogenetic protein 4 (BMP-4), have been implicated as regulators of
neuronal and glial differentiation. To test for a possible role of BMP-4
in early mammalian neural specification, we examined its effect on
neurogenesis in aggregate cultures of mouse ***embryonic*** ***stem*** (ES) cells. Compared to control aggregates, in which up to
20% of the cells acquired immunoreactivity for the neuron-specific
antibody TuJ1, aggregates maintained for 8 days in ***serum*** -
free ***medium*** containing BMP-4 generated 5- to 10-fold
fewer neurons. The action of BMP-4 was dose dependent and restricted to
the fifth through eighth day in suspension. In addition to the reduction
in neurons, we observed that ES cell cultures exposed to BMP-4 contained
fewer cells that were immunoreactive for glial fibrillary acidic protein
or the HNK-1 neural antigen. Furthermore, under phase contrast, cultures
prepared from BMP-4-treated aggregates contained a significant proportion
of nonneuronal cells with a characteristic flat, elongated morphology.
These cells were immunoreactive for antibodies to the intermediate
filament protein vimentin; they were rare or absent in control cultures.
Treatment with BMP-4 enhanced the expression of the early mesodermal genes
brachyury and tbx6 but had relatively little effect on total cell number
or cell death. Coapplication of the BMP-4 antagonist noggin counteracted
the effect of exogenous BMP-4, but noggin alone had no effect on
neuralization in either the absence or presence of retinoids.
Collectively, our results suggest that BMP-4 can overcome the neuralizing
action of retinoic acid to enhance mesodermal differentiation of murine ES
cells. Copyright 1999 John Wiley & Sons, Inc.

L5 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2000 ACS
AN 1998:75491 CAPLUS
DN 128:163162
TI ***Embryonic*** ***stem*** cells as a model for studying regulation of cellular differentiation
AU Dinsmore, J.; Ratliff, J.; Jacoby, D.; Wunderlich, M.; Lindberg, C.
CS Diacrin, Inc., Charlestown, MA, USA
SO Theriogenology (1998), 49(1), 145-151
CODEN: THGNBO; ISSN: 0093-691X
PB Elsevier Science Inc.
DT Journal
LA English
AB Mouse ***embryonic*** ***stem*** (ES) cells can be

differentiated
in vitro into near homogeneous populations of both neurons and skeletal
muscle as well as other cell types. The authors previously showed that
treatment of pluripotent ES cells with retinoic acid (RA) induced
differentiation into highly enriched populations of .gamma.-aminobutyric
acid (GABA) expressing neurons. The reasons for generation of only GABA
neurons as opposed to other neuronal cell types were not known. The
authors have extended their previous work and now show that with RA
induction of ES cells they not only obtain GABA neurons, but also
dopaminergic neurons. Crit. for the prodn. of dopaminergic neurons after
RA induction was the post-induction plating conditions used. No
dopaminergic neurons were detected if cells were plated in ***serum***
- ***free*** ***media*** optimized for neuronal survival. However,
significant nos. of dopamine neurons could be detected when cells were
plated in media contg. fetal calf serum. These observations support the
conclusion that RA acts as a general neural inducing agent and that
conditions post-induction either selectively support survival of a
particular class of neuronal cells or that the conditions post-induction
actually further instruct cells to differentiate into different types of
neurons.

L5 ANSWER 3 OF 8 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1997:135574 BIOSIS
DN PREV199799434777
TI TEC-1 characterisation of porcine embryonic cells from day 11 embryonic
discs cultured in ***serum*** - ***free*** ***medium***
.
AU Booth, P. J. (1); Perreau, C.; Hochereau-De Reviers, M. T.
CS (1) Embryo Technol. Cent., Dan. Inst. Anim. Sci., DK-8830 Tjele Denmark
SO Theriogenology, (1997) Vol. 47, No. 1, pp. 240.
Meeting Info.: Annual Conference of the International Embryo Transfer
Society Nice, France January 12-14, 1997
ISSN: 0093-691X.
DT Conference; Abstract; Conference
LA English

L5 ANSWER 4 OF 8 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1996:495890 BIOSIS
DN PREV199699218246
TI Neuronal induction of ***embryonic*** ***stem*** cells in
serum - ***free*** ***medium*** .
AU Finley, M. F. A.; Devata, S.; Huettner, J. E.
CS Dep. Cell Biol. Physiol., Washington Univ., St. Louis, MO 63110 USA
SO Society for Neuroscience Abstracts, (1996) Vol. 22, No. 1-3, pp. 521.
Meeting Info.: 26th Annual Meeting of the Society for Neuroscience
Washington, D.C., USA November 16-21, 1996
ISSN: 0190-5295.
DT Conference
LA English

L5 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2000 ACS
AN 1995:291533 CAPLUS
DN 122:78816
TI The effects of leukemia inhibitory factor (LIF) on cell multiplication and
locomotion in human teratocarcinoma cells
AU Granerus, Marika; Bierke, Paer; Engstroem, Wilhelm
CS Department Pathology, Swedish University Agricultural Sciences, Uppsala,
S-750 07, Swed.
SO Int. J. Oncol. (1994), 5(6), 1419-23
CODEN: IJONES; ISSN: 1019-6439
DT Journal
LA English
AB The human teratocarcinoma cell line (Tera 2) could be stimulated to a
moderate increase in cell no. in ***serum*** - ***free***
medium by addn. of 5 ng leukemia inhibitory factor (LIF)/mL.
However this effect was only obsd. in short term (24 h) cultures. By
comparing cell nos. with thymidine incorporation data and proportion
intact cell nuclei, we concluded that this short term increase in cell no.
was due to enhanced cell survival rather than a real increase in the
proportion of cells traversing the cell cycle. When increased concns. of
LIF were added a preferential effect on clonal cell locomotion was obsd.
Fifty--200 ng of LIF stimulated cell movement but exerted no effect on
Tera 2 cell proliferation at any time interval studied.

L5 ANSWER 6 OF 8 MEDLINE DUPLICATE 2
AN 93191693 MEDLINE
DN 93191693
TI Fibroblast growth factor-mediated growth regulation and receptor expression in embryonal carcinoma and ***embryonic*** ***stem***
cells and human germ cell tumours.
AU Mummery C L; van Rooyen M; Bracke M; van den Eijnden-van Raaij J; van
Zoelen E J; Alitalo K
CS Hubrecht Laboratory, Netherlands Institute for Developmental Biology,
Ultrecht.
SO BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, (1993 Feb 26) 191 (1)
188-95.
Journal code: 9Y8. ISSN: 0006-291X.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 199306
AB FGFs have been implicated in the induction of mesoderm in amphibian
development and are present in the mouse embryo at stages that would be
appropriate for a similar function in mammals. Primitive ectoderm would
then be the target tissue. We have now changes in the expression of
receptors for FGFs during the differentiation of embryonal carcinoma (EC)
and ***embryonic*** ***stem*** (ES) cells from the mouse. These
cells resemble those of the inner cell mass and later primitive ectoderm.
On Northern blots of mRNA from undifferentiated cells, transcripts for FGF
R1, R2 and R3 are expressed. All are upregulated during differentiation of
ES cells and are upregulated or remain constant as EC cells differentiate.
FGF R4 is only expressed after differentiation to derivatives resembling
parietal endoderm. By contrast in human EC cells, FGF R2 is downregulated
during differentiation, FGF R1 and FGF R3 are unchanged and FGF R4 is
expressed before and after differentiation. In both human and mouse EC
cells three members of the FGF family (a FGF, b FGF and k FGF, also known
as FGFs 1,2 and 4) are mitogenic in ***serum*** - ***free***
medium and one (KGF or FGF 7) appears to have no effect on growth
although cellular morphology is altered. Differences between human and
mouse cells are primarily in the effects of heparin on the FGF-induced
response.

L5 ANSWER 7 OF 8 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1993:344651 BIOSIS
DN PREV199396041651
TI The activin A-dependent proliferation of PCC3/A/1 embryonal carcinoma
cells in ***serum*** - ***free*** ***medium*** .
AU Atsumi, Tadao (1); Miwa, Yoko; Eto, Yuzuru; Sugino, Hiromu; Kusakabe,

Moriaki; Kitani, Hiroshi; Ikawa, Yoji (1)
CS (1) Lab. Mol. Oncol., Tsukuba Life Sci. Cent., Inst. physical and ChemicalRes., 3-1-1, Koyadai, Tsukuba 305 Japan
SO Development Growth & Differentiation, (1993) Vol. 35, No. 1, pp. 81-87.
ISSN: 0012-1592.
DT Article
LA English
AB Examination of the growth requirements of murine embryonal carcinoma cells
(EC cells) or ***embryonic*** ***stem*** cells (ES cells) in
serum - ***free*** ***medium*** revealed that PCC3 EC cells
required activin A to grow and/or survive in such medium. In the absence
of activin A, PCC3 cells began to disintegrate within 3 days under any
serum-free conditions examined. P19 and AT805 EC cells grew even in
serum - ***free*** ***medium*** without activin A but their
growth rates were slightly facilitated by its addition. F9 EC cells also
grew in the medium without activin A and its addition somewhat inhibited
their growth rate. Three independently isolated ES cell lines and
feeder-dependent PSA-1 EC cells also grew in ***serum*** - ***free***
medium without activin A if leukemia inhibitory factor (LIF) was
supplemented. The addition of activin A had little effect on their growth
rates. These findings suggest that PCC3 EC cells are a sort of nutritional
mutant requiring activin A, thus making them useful in studies on the
growth regulatory mechanisms of EC/ES cells and/or the action of activin
on EC/ES cells.

L5 ANSWER 8 OF 8 BIOSIS COPYRIGHT 2000 BIOSIS DUPLICATE 3
AN 1986:438581 BIOSIS
DN BA82:104769
TI PARTIAL EXPRESSION OF MONOAMINERGIC SEROTONINERGIC PROPERTIES BY THE
MULTIPOTENT HYPOTHALAMIC CELL LINE F-7 AN EXAMPLE OF LEARNING AT THE
CELLULAR LEVEL.
AU DE VITRY F; CATELON J; DUBOIS M; THIBAULT J; BARRITAULT D; COURTY J;
BOURGOIN S; HAMON M
CS NEUROENDOCRINOL. CELLULAIRE MOLECULAIRE, COLL. FRANCE, 11 PLACE MARCELIN
BERTHELOT, 75231 PARIS, CEDEX 05, FRANCE.
SO NEUROCHEM INT, (1986) 9 (1), 43-54.
CODEN: NEUIDS. ISSN: 0197-0186.
FS BA; OLD
LA English
AB A ***serum*** - ***free*** ***medium*** supplemented with a
glial conditioned medium, a brain extract from 8-to 10-day-old mice,
hormones, and eye-derived growth factor has been devised which permitted
the mouse primitive hypothalamic nerve cell line F7 to express some
biochemical properties typical of monoaminergic neurons. Maximal
expression was obtained when the culture conditions were applied for 2
days. Most (90-95%) cells then synthesized [3H]serotonin from
[3H]5-hydroxytryptophan (but not from [3H]tryptophan). No synthesis was
detected in the presence of carbidopa (20 .mu.M), therefore suggesting the
involvement of L-aromatic-amino-acid decarboxylase in this process. In
addition, F7 cells cultured in such ***serum*** - ***free***
medium exhibited the capacity of accumulating exogenous serotonin
by a ouabain-sensitive mechanism. These data further supported that active
molecules in the cell environment can induce, in a primitive cell line,
some of the enzymatic activities associated with monoaminergic neurons.
Since other well-defined culture conditions can promote the
differentiation of the same clone into oligodendrocytes (De Vitry et al.,
1983), it can be concluded that the F7 cell has the properties of an
embryonic ***stem*** cell of the CNS which, depending on
external signals, may switch into different alternative developmental
neural pathways. We postulate that the stabilization of neuron-like
properties due to repetitive cell stimulation by active signals in the
environment may represent an example of learning at the cellular level.

=> s without serum or (absence (2a) serum)/ab,bi

'AB' IS NOT A VALID FIELD CODE
'AB' IS NOT A VALID FIELD CODE
'AB' IS NOT A VALID FIELD CODE
L6 9506 WITHOUT SERUM OR (ABSENCE (2A) SERUM)/AB,BI

=> s l6 and embryonic stem/ab,bi

'AB' IS NOT A VALID FIELD CODE
'AB' IS NOT A VALID FIELD CODE
'AB' IS NOT A VALID FIELD CODE
L7 10 L6 AND EMBRYONIC STEM/AB,BI

=> dup rem l7

PROCESSING COMPLETED FOR L7
L8 3 DUP REM L7 (7 DUPLICATES REMOVED)

=> d l- bib ab

YOU HAVE REQUESTED DATA FROM 3 ANSWERS - CONTINUE? Y/(N):y

L8 ANSWER 1 OF 3 MEDLINE DUPLICATE 1
AN 1999272671 MEDLINE
DN 99272671
TI PTEN modulates cell cycle progression and cell survival by regulating
phosphatidylinositol 3,4,5,-trisphosphate and Akt/protein kinase B
signaling pathway.
AU Sun H; Lesche R; Li D M; Liliental J; Zhang H; Gao J; Gavrilova N; Mueller
B; Liu X; Wu H
CS Department of Genetics, Yale University School of Medicine, 333 Cedar
Street, New Haven, CT 06520, USA.
NC CA72878 (NCI)
SO PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF
AMERICA, (1999 May 25) 96 (11) 6199-204.
Journal code: PV3. ISSN: 0027-8424.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 199908
EW 19990804
AB To investigate the molecular basis of PTEN-mediated tumor suppression, we
introduced a null mutation into the mouse Pten gene by homologous
recombination in ***embryonic*** ***stem*** (ES) cells. Pten-/- ES
cells exhibited an increased growth rate and proliferated even in the
absence of ***serum*** . ES cells lacking PTEN function also
displayed advanced entry into S phase. This accelerated G1/S transition
was accompanied by down-regulation of p27(KIP1), a major inhibitor for G1
cyclin-dependent kinases. Inactivation of PTEN in ES cells and in
embryonic fibroblasts resulted in elevated levels of phosphatidylinositol
3,4,5,-trisphosphate, a product of phosphatidylinositol 3 kinase.
Consequently, PTEN deficiency led to dosage-dependent increases in
phosphorylation and activation of Akt/protein kinase B, a

well-characterized target of the phosphatidylinositol 3 kinase signaling
pathway. Akt activation increased Bad phosphorylation and promoted Pten-/-
cell survival. Our studies suggest that PTEN regulates the
phosphatidylinositol 3,4, 5,-trisphosphate and Akt signaling pathway and
consequently modulates two critical cellular processes: cell cycle progression and cell survival.

L8 ANSWER 2 OF 3 MEDLINE DUPLICATE 2
AN 2000077708 MEDLINE
DN 20077708
TI Culture of human embryos for studies on the derivation of human pluripotent cells: a preliminary investigation.
AU Lavoir M C; Conaghan J; Pedersen R A
CS Department of Obstetrics, Gynecology and Reproductive Sciences, University
of California, San Francisco 94143-0720, USA.. mlavoir@itsa.ucsf.edu
SO REPRODUCTION, FERTILITY, AND DEVELOPMENT, (1998) 10 (7-8) 557-61.
Journal code: RAI. ISSN: 1031-3613.
CY Australia
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200004
EW 20000402
AB Several different culture conditions were evaluated for culturing grade 4
embryos (containing 2-4 blastomeres and with >50% fragmentation) 68 h
after fertilization to the blastocyst stage. Embryos were co-cultured with
buffalo rat liver (BRL) cells in Menezo's B2 medium with or without 10%
v/v synthetic serum substitute (SSS), co-cultured with BRL cells in KSOM
with or without 10% SSS, or cultured in KSOM with 100 nM heparin binding
epidermal growth factor. The most consistent development was obtained when
embryos were co-cultured with BRL cells in KSOM. Rates of development to
the blastocyst stage were between 27% and 40%. After reaching the
blastocyst stage, continued culture of these blastocysts was only possible
in a medium ***without*** ***serum*** . In a serum-deprived medium
cells attached and showed initial outgrowth, but did not survive
passaging. Using another approach, inner cell masses (ICMs), isolated from
blastocysts with high efficiency using immunosurgery, were able to attach
to a feeder layer in the presence of serum. Some ICMs differentiated
whereas others could be successfully passaged up to four times. The
embryonic cells were morphologically different from murine
embryonic ***stem*** cells. Instead of well-defined colonies,
the human colonies were characterized by individual cells and colonies
without defined borders.

L8 ANSWER 3 OF 3 MEDLINE DUPLICATE 3
AN 96193920 MEDLINE
DN 96193920
TI Role of retinoic acid and oxidative stress in ***embryonic*** ***stem*** cell death and neuronal differentiation.
AU Castro-Obregon S; Covarrubias L
CS Departamento de Genetica y Fisiologia Molecular, Instituto de Biotecnologia, UNAM, Cuernavaca, Mexico.
SO FEBS LETTERS, (1996 Feb 26) 381 (1-2) 93-7.
Journal code: EUH. ISSN: 0014-5793.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 199609
AB ***Embryonic*** ***stem*** (ES) cells are a suitable system to
study events occurring during development. In the present work we show
that the apoptotic program was activated in ES cells, either by simple
removal of the reducing agent 2-mercaptoethanol (2-ME), or by addition of
all trans-retinoic (ATRA) to embryoid bodies. In these two conditions,
there was an increase in reactive oxygen species and antioxidants such as
catalase, superoxide dismutase or phenol prevented ATRA-induced cell
death. Neuronal differentiation was observed when undifferentiated ES
cells were treated with ATRA in the ***absence*** of ***serum***
and the presence of 2-ME.

=> d his

(FILE 'HOME' ENTERED AT 09:04:49 ON 29 FEB 2000)

FILE 'MEDLINE' ENTERED AT 09:04:54 ON 29 FEB 2000
L1 5870 S SERUM FREE MEDIA OR SERUM FREE MEDIUM/AB,BI
L2 248 S L1 AND EMBRYONIC/AB,BI
L3 2 S L1 AND EMBRYONIC STEM/AB,BI

FILE 'MEDLINE, EMBASE, BIOSIS, INPADOC, CAPLUS' ENTERED AT 09:07:07 ON 29 FEB 2000
L4 15 S L3
L5 8 DUP REM L4 (7 DUPLICATES REMOVED)
L6 9506 S WITHOUT SERUM OR (ABSENCE (2A) SERUM)/AB,BI
L7 10 S L6 AND EMBRYONIC STEM/AB,BI
L8 3 DUP REM L7 (7 DUPLICATES REMOVED)

=> file stnguide

COST IN U.S. DOLLARS SINCE FILE TOTAL
ENTRY SESSION
FULL ESTIMATED COST 50.74 52.47

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)
SINCE FILE TOTAL
ENTRY SESSION
CA SUBSCRIBER PRICE -1.11 -1.11

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AND TECHNOLOGY CORPORATION, AND FACHINFORMATIONSZENTRUM KARLSRUHE

FILE CONTAINS CURRENT INFORMATION.
LAST RELOADED: Feb 25, 2000 (20000225/UP).

=> file medline embase biosis inpadoc caplus

COST IN U.S. DOLLARS SINCE FILE TOTAL
ENTRY SESSION
FULL ESTIMATED COST 0.00 52.47

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)
SINCE FILE TOTAL
ENTRY SESSION
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=> e price paul/au

E1 3 PRICE PATTI J/AU
E2 2 PRICE PATTI JO/AU
E3 18 --> PRICE PAUL/AU
E4 144 PRICE PAUL A/AU
E5 1 PRICE PAUL ARMS/AU
E6 8 PRICE PAUL B/AU
E7 26 PRICE PAUL BUFORD/AU
E8 2 PRICE PAUL BULFORD/AU
E9 4 PRICE PAUL C/AU
E10 1 PRICE PAUL D/AU
E11 1 PRICE PAUL F/AU
E12 1 PRICE PAUL I/AU

=> s e3

L9 18 "PRICE PAUL"/AU

=> e price paul j/au

E1 1 PRICE PAUL F/AU
E2 1 PRICE PAUL I/AU
E3 54 --> PRICE PAUL J/AU
E4 3 PRICE PAUL JOHN/AU
E5 8 PRICE PAUL S/AU
E6 4 PRICE PAUL W/AU
E7 1 PRICE PAUL WILLIAM JR/AU
E8 2 PRICE PAULA/AU
E9 1 PRICE PAULA A/AU
E10 1 PRICE PEGGY S/AU
E11 1 PRICE PERIN L/AU
E12 22 PRICE PETER/AU

=> s e3-e4

L10 57 ("PRICE PAUL J"/AU OR "PRICE PAUL JOHN"/AU)

=> s l9 or l10

L11 75 L9 OR L10

=> e goldsborough mindy d/au

E1 2 GOLDSBOROUGH MAURA/AU
E2 12 GOLDSBOROUGH MAURA A/AU
E3 9 --> GOLDSBOROUGH MINDY D/AU
E4 1 GOLDSBOROUGH MINDY DAVIS/AU
E5 1 GOLDSBOROUGH PETER B/AU
E6 12 GOLDSBOROUGH R/AU
E7 3 GOLDSBOROUGH ROBERT J/AU
E8 3 GOLDSBOROUGH ROBERT R/AU
E9 7 GOLDSBOROUGH S/AU
E10 1 GOLDSBOROUGH S J/AU
E11 1 GOLDSBOROUGH STANLEY D/AU
E12 1 GOLDSBOROUGH W J/AU

=> s e3-e4

L12 10 ("GOLDSBOROUGH MINDY D"/AU OR "GOLDSBOROUGH MINDY DAVIS"/AU)

=> e tilkins mary lynn/au

E1 1 TILKINA M I/AU
E2 4 TILKINS M L/AU
E3 9 --> TILKINS MARY LYNN/AU
E4 2 TILKIOGLU N/AU
E5 1 TILKIYAN E/AU
E6 3 TILKIYAN VLADIMIR G/AU
E7 1 TILKKI H/AU
E8 2 TILKORN A/AU
E9 3 TILKORN A C/AU
E10 3 TILKORN ANNE/AU
E11 5 TILKORN ANNE CHRISTINE/AU
E12 23 TILKORN H/AU

=> s e2-e3

L13 13 ("TILKINS M L"/AU OR "TILKINS MARY LYNN"/AU)

=> d his

(FILE 'HOME' ENTERED AT 09:04:49 ON 29 FEB 2000)

FILE 'MEDLINE' ENTERED AT 09:04:54 ON 29 FEB 2000
L1 5870 S SERUM FREE MEDIA OR SERUM FREE MEDIUM/AB,BI
L2 248 S L1 AND EMBRYONIC/AB,BI
L3 2 S L1 AND EMBRYONIC STEM/AB,BI

FILE 'MEDLINE, EMBASE, BIOSIS, INPADOC, CAPLUS' ENTERED AT 09:07:07 ON 29
FEB 2000
L4 15 S L3
L5 8 DUP REM L4 (7 DUPLICATES REMOVED)
L6 9506 S WITHOUT SERUM OR (ABSENCE (2A) SERUM)/AB,BI
L7 10 S L6 AND EMBRYONIC STEM/AB,BI
L8 3 DUP REM L7 (7 DUPLICATES REMOVED)

FILE 'STNGUIDE' ENTERED AT 09:13:00 ON 29 FEB 2000

FILE 'MEDLINE, EMBASE, BIOSIS, INPADOC, CAPLUS' ENTERED AT 09:14:45 ON 29
FEB 2000
E PRICE PAUL/AU
L9 18 S E3
E PRICE PAUL J/AU
L10 57 S E3-E4
L11 75 S L9 OR L10
E GOLDSBOROUGH MINDY D/AU
L12 10 S E3-E4
E TILKINS MARY LYNN/AU
L13 13 S E2-E3

=> s (l1 or l6) and (l11 or l12 or l13)

'AB' IS NOT A VALID FIELD CODE
'AB' IS NOT A VALID FIELD CODE
L14 11 (L1 OR L6) AND (L11 OR L12 OR L13)

=> dup rem l14

PROCESSING COMPLETED FOR L14
L15 10 DUP REM L14 (1 DUPLICATE REMOVED)

=> d 1- bib ab

YOU HAVE REQUESTED DATA FROM 10 ANSWERS - CONTINUE? Y/(N):y

L15 ANSWER 1 OF 10 CAPLUS COPYRIGHT 2000 ACS
AN 1998:114727 CAPLUS
DN 128:179429
TI Recombinant protein production by CHO cells cultured in a chemically
defined medium
AU Gorfien, Stephen F.; Dzimian, Joyce L.; ***Tilkins, Mary Lynn*** ;
Godwin, Glenn P.; Fike, Richard
CS Life Technologies, Inc., Grand Island, NY, 14072, USA
SO Anim. Cell Technol.: Basic Appl. Aspects, Proc. Annu. Meet. Jpn. Assoc.
Anim. Cell Technol., 9th (1998), Meeting Date 1996, 247-252. Editor(s):
Nagai, Kazuo; Wachi, Masaaki. Publisher: Kluwer, Dordrecht, Neth.
CODEN: 65RGAA
DT Conference
LA English
AB Serum-free culture of chinese hamster ovary (CHO) cells has become
increasingly common as a way of obtaining high levels of expression of
recombinant proteins while simplifying recovery and downstream processing
of the product. However, ***serum*** - ***free*** ***media***
may still contain one or more of a variety of animal-derived components
including albumin, fetuin, various hormones and other proteins. We have
demonstrated that it is possible to eliminate animal-derived proteins from
a CHO medium formulation. Plasma protein fractions like albumin

and
fetuin may be replaced by plant-derived hydrolyzates, resulting in medium
that is protein-free but still undefined (CHO III PFM). CD CHO Medium is
a chem. defined formulation which contains no protein or hydrolyzates of
either plant or animal origin. Peak cell densities and recombinant protein expression in CD CHO cultures compared favorably to expression in
other media, although the maximal cell d. and the highest levels of expression were obsd. at later time points. We were able to successfully
supplement the culture with sodium butyrate to increase expression levels
at the expense of peak cell d., so for recombinant cell lines showing an
inverse relationship between growth and expression of recombinant product,
strategies which limit the peak cell d. may be useful for increasing expression.

L15 ANSWER 2 OF 10 BIOSIS COPYRIGHT 2000 BIOSIS
DUPLICATE 1
AN 1998:13258 BIOSIS
DN PREV199800013258
TI Retention of xenobiotic-inducible cytochrome P450 gene expression in
hepatocytes.
AU ***Price, Paul J. (1)*** ; Samrock, Roxanne L.; Lobo-Alfonso, Juliet
O.; Green, Carol E.
CS (1) Life Technol. Inc., 3175 Staley Rd., Grand Island, NY 14072 USA
SO In Vitro Toxicology, (Fall, 1997) Vol. 10, No. 3, pp. 365-371.
ISSN: 0888-319X.
DT Article
LA English
AB A serum-free formulation has been developed for the long-term maintenance
of xenobiotic-inducible cytochrome P450 expression of hepatocytes in
vitro. Purified rat or human hepatocytes were cultured in either
serum-containing or ***serum*** - ***free*** ***media*** for
10-14 days on either a collagen:collagen sandwich or collagen:Matrigel
matrix. The cultures were then evaluated for cytochrome P450 activity
using two different enzyme substrates. In both culture systems, the
serum-free formulation proved to be clearly superior to the control
(serum-supplemented Williams E with the rat hepatocytes and a Waymouths
752/1 based ***serum*** - ***free*** ***medium*** with the human
hepatocytes). This paper also addresses the choice of the basal
formulation for the SFM and the reasons for the choice of components that
are supplemented into the medium.

L15 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2000 ACS
AN 1996:690982 CAPLUS
DN 126:17853
TI Serum-free culture of human venous, arterial, and microvascular
endothelial cells using a low-protein, ***serum*** - ***free***
medium
AU Battista, Paul J.; Soderland, Carl; ***Tilkins, Mary Lynn*** ; Gorfien,
Stephen F.
CS Cell Culture Research and Development Dept., Life Technologies, Inc.,
Grand Island, NY, 14072, USA
SO Am. Biotechnol. Lab. (1996), 14(11), 34,36-37
CODEN: ABLAEY; ISSN: 0749-3223
PB International Scientific Communications
DT Journal
LA English
AB The use of Human Endothelial-SFM, a low-protein, ***serum*** -
free ***medium*** (SFM) formulated to support the isolation
and long-term culture of human endothelial cells was described. Cells
cultured in this medium demonstrate growth characteristics and retention
of physiol. markers similar to cells cultured in traditional serum and
growth factor-supplemented culture medium.

L15 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2000 ACS
AN 1995:621945 CAPLUS
DN 123:54196
TI Anchorage-dependent growth and recombinant protein production by Chinese
hamster ovary cells in ***serum*** - ***free*** ***medium***
AU Battista, Paul J.; ***Tilkins, Mary Lynn*** ; Jayme, David W.; Gorfien,
Stephen F.
CS GIBCO BRL/Life Technologies, Inc., Grand Island, NY, USA
SO Anim. Cell Technol.: Basic Appl. Aspects, Proc. Int. Meet. Jpn. Assoc.
Anim. Cell Technol., 6th (1994), Meeting Date 1993, 325-9.
Editor(s):
Kobayashi, Takeshi; Kitagawa, Yasuo; Okumura, Katsuzumi.
Publisher:
Kluwer, Dordrecht, Neth.
CODEN: 61NMAE
DT Conference
LA English
AB Chinese hamster ovary (CHO) cells are commonly used for the prodn. of
recombinant proteins owing to the ability of these cells to stably
maintain the expression of foreign gene products which structurally and
functionally resemble the naturally occurring human proteins. Serum-free
culture of CHO cells is desirable since it facilitates downstream
processing and recovery of products and minimizes problems assocd. with
serum usage, such as lot-to-lot performance variability, presence of
adventitious agents, and fluctuations in price and availability. The
authors previously developed several ***serum*** - ***free***
media (SFM) formulations which support anchorage-independent
growth and protein expression of CHO cells. While suspension culture of
CHO cells is now an accepted method, there are many applications for which
anchorage-dependent culture is desirable. Use of SFM optimized for
suspension culture may result in suboptimal performance when used in
anchorage-dependent culture systems. A recently developed prototype
formulation, designated Adherent CHO-SFM, has been specifically formulated
to support growth and recombinant protein prodn. using anchorage-dependent
culture systems. This medium contains no bovine-derived components and
has protein and endotoxin concns. of .ltbbrac.250 .mu.g/mL and
.ltbbrac.1.0 EU.mL, resp. The utility of this formulation has been
demonstrated using small and larger-scale anchorage-dependent cell culture
systems including tissue culture flasks, roller bottles, microcarriers and
artificial capillary units. Cells cultured in Adherent CHO-SFM
demonstrated biol. performance which was superior to that obtained with
serum-supplemented medium. Development of Adherent CHO-SFM complements
our existing options for serum-free culture of CHO cells and offers the
end user greater flexibility in choosing an appropriate cell culture
system.

L15 ANSWER 5 OF 10 MEDLINE
AN 94220266 MEDLINE
DN 94220266
TI ***Serum*** - ***free*** ***media*** for the culture of Chinese
hamster ovary cells.
AU Battista P J; ***Tilkins M L*** ; Judd D A; Godwin G P; Gorfien S F
CS GIBCO BRL/Life Technologies, Inc., Grand Island, NY 14072..
SO AMERICAN BIOTECHNOLOGY LABORATORY, (1994 Apr) 12 (5) 64, 66, 68.
Journal code: ALA. ISSN: 0749-3223.
CY United States

DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS B
EM 199408

L15 ANSWER 6 OF 10 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1994:98369 BIOSIS
DN PREV199497111369
TI ***Serum*** - ***free*** ***medium*** for the growth and
recombinant protein production of anchorage-dependent Chinese hamster
ovary cells.
AU ***Tilkins, M. L.*** ; Battista, P. J.; Gorfien, S. F.
CS GIBCO BRL/Life Technologies Inc., Cell Culture R and D, 2086 Grand Island
Blvd., Grand Island, NY 14072 USA
SO Molecular Biology of the Cell, (1993) Vol. 4, No. SUPPL., pp. 335A.
Meeting Info.: Thirty-third Annual Meeting of the American Society for
Cell Biology New Orleans, Louisiana, USA December 11-15, 1993
ISSN: 1059-1524.
DT Conference
LA English

L15 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2000 ACS
AN 1994:555863 CAPLUS
DN 121:155863
TI Chinese hamster ovary (CHO) cell growth and recombinant protein production
in ***serum*** - ***free*** ***media***
AU Battista, Paul J.; ***Tilkins, Mary Lynn*** ; Judd, David A.; Gorfien,
Stephen F.; Jayme, David W.
CS GIBCO BRL/Life Technol. Inc., Grand Island, NY, 14072, USA
SO Anim. Cell Technol.: Basic Appl. Aspects, Proc. Int. Meet. Jpn. Assoc.
Anim. Cell Technol., 5th (1993), Meeting Date 1992, 251-7.
Editor(s):
Kaminogawa, Shuichi; Ametani, Akio; Hachimura, Satoshi.
Publisher: Kluwer,
Dordrecht, Neth.
CODEN: 60AEAM
DT Conference
LA English
AB CHO cells have become increasingly important for recombinant gene
expression, owing to their low rate of spontaneous transformation and
biomanuf. of recombinant products that structurally and functionally
resemble the native mols. The authors recently developed a low protein
(<100 .mu.g/mL), low endotoxin (<0.25 EU/mL) ***serum*** - ***free***
medium (CHO-S-SFM II) formulated to support the growth of CHO
cells and the prodn. of recombinant proteins in suspension culture. Both
wild type and recombinant CHO cells were adapted, maintained,
cryopreserved and recovered in CHO-S-SFM II. Cells cultured in this
serum - ***free*** ***medium*** out-perform parallel
cultures in serum-supplemented medium, reaching peak densities of
3-4.times.106 viable cells/mL and producing over 1.0 .mu.g/mL of
recombinant human chorionic gonadotropin. CHO-S-SFM II demonstrated
superior growth performance compared to four com. ***serum*** -
free ***media*** for CHO cells. A prototype powd. form of
CHO-S-SFM II exhibited performance equiv. to liq. medium. ***Serum***
- ***free*** ***medium*** eliminates problems assocd. with serum
usage, such as lot-to-lot performance variability, presence of
adventitious agents and fluctuations in price and availability. The low
protein content of CHO-S-SFM II facilitates downstream processing of
recombinant proteins and reduces final product cost. Addnl., the low
endotoxin level of this medium reduces regulatory concerns for the prodn.
of therapeutic proteins.

L15 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2000 ACS
AN 1994:430326 CAPLUS
DN 121:30326
TI Sustained inducibility of cytochrome P450 activity in rat hepatocytes
cultured in a ***serum*** - ***free*** ***medium***
AU Lobo, Juliet O.; Samrock, Roxanne L.; Jayme, David W.; ***Price, Paul***
*** J.***
CS GIBCO BRL/Life Technol. Inc., Grand Island, NY, 14072, USA
SO Anim. Cell Technol.: Basic Appl. Aspects, Proc. Int. Meet. Jpn. Assoc.
Anim. Cell Technol., 5th (1993), Meeting Date 1992, 195-201.
Editor(s):
Kaminogawa, Shuichi; Ametani, Akio; Hachimura, Satoshi.
Publisher: Kluwer,
Dordrecht, Neth.
CODEN: 60AEAM
DT Conference
LA English
AB Liver microsomal oxygenases are multicomponent enzyme systems which
metabolize a wide variety of xenobiotics. A major component of the system
is a group of enzymes collectively known as cytochrome P 450 (CP450). A
major limitation in the use of rodent hepatocyte cultures in toxicity
testing and pharmacokinetic studies has been the rapid loss of phase 1
reactions catalyzed by the CP450-dependent mono-oxygenases. Using a
sandwich matrix and a ***serum*** - ***free*** ***medium***
developed by GIBCO, total rat CP450 could be maintained for at least 9
days at 75-80% day "0" levels. Metabolic studies of the microsomal
fraction of primary adult rat hepatocytes, measured by the conversion of
7-ethoxycoumarin to 7-hydroxycoumarin and of 3,4-benzo-[a]-pyrene to
3-hydroxybenzo-[a]-pyrene, demonstrated maintenance of activity over the
same 9 days comparable to the "0" time controls.

L15 ANSWER 9 OF 10 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1993:38374 BIOSIS
DN PREV199344015224
TI ***Serum*** - ***free*** ***medium*** options for chinese
hamster ovary (CHO) cell culture.
AU ***Tilkins, M. L. (1)*** ; Judd, D. (1); Weiss, S. (1); Boime, I.;
Pixley, M.; Gorfien, S. F. (1)
CS (1) GIBCO/Life Technologies Inc., Cell Culture R and D, 2086 Grand Island
Blvd., Grand Island, N.Y. 14072
SO Molecular Biology of the Cell, (1992) Vol. 3, No. SUPPL., pp. 187A.
Meeting Info.: Thirty-second Annual Meeting of the American Society for
Cell Biology, Denver, Colorado, USA, November 15-19, 1992. MOL BIOL CELL
ISSN: 1059-1524.
DT Conference
LA English

L15 ANSWER 10 OF 10 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1992:88805 BIOSIS
DN BR42:41080
TI GROWTH AND RDNA PROTEIN PRODUCTION IN AN IMPROVED ***SERUM*** -
FREE ***MEDIUM*** FORMULATION.
AU GORFIEN S F; ***TILKINS M L*** ; JUDD D; BOIME I; PIXLEY M; WEISS S A
CS GIBCO/LTI, GRAND ISLAND, N.Y.
SO ABSTRACTS OF PAPERS PRESENTED AT THE THIRTY-FIRST ANNUAL MEETING OF THE
AMERICAN SOCIETY FOR CELL BIOLOGY, BOSTON, MASSACHUSETTS, USA, DECEMBER
8-12, 1991. J CELL BIOL. (1991) 115 (3 PART 2), 358A.
CODEN: JCLBA3. ISSN: 0021-9525.
DT Conference

FS BR; OLD
LA English

=> d his

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FILE 'MEDLINE' ENTERED AT 09:04:54 ON 29 FEB 2000
L1 5870 S SERUM FREE MEDIA OR SERUM FREE MEDIUM/AB,BI
L2 248 S L1 AND EMBRYONIC/AB,BI
L3 2 S L1 AND EMBRYONIC STEM/AB,BI

FILE 'MEDLINE, EMBASE, BIOSIS, INPADOC, CAPLUS' ENTERED AT 09:07:07 ON 29
FEB 2000
L4 15 S L3
L5 8 DUP REM L4 (7 DUPLICATES REMOVED)
L6 9506 S WITHOUT SERUM OR (ABSENCE (2A) SERUM)/AB,BI
L7 10 S L6 AND EMBRYONIC STEM/AB,BI
L8 3 DUP REM L7 (7 DUPLICATES REMOVED)

FILE 'STNGUIDE' ENTERED AT 09:13:00 ON 29 FEB 2000

FILE 'MEDLINE, EMBASE, BIOSIS, INPADOC, CAPLUS' ENTERED AT 09:14:45 ON 29
FEB 2000
E PRICE PAUL/AU
L9 18 S E3
E PRICE PAUL J/AU
L10 57 S E3-E4
L11 75 S L9 OR L10
E GOLDSBOROUGH MINDY D/AU
L12 10 S E3-E4
E TILKINS MARY LYNN/AU
L13 13 S E2-E3
L14 11 S (L1 OR L6) AND (L11 OR L12 OR L13)
L15 10 DUP REM L14 (1 DUPLICATE REMOVED)

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S23		ALL	price-paul$.in.	☐
S22		ALL	goldsborough-mindy$.in.	☐
S21		USPT	goldsborough-mindy$.in.	☐
S20		USPT	embryonic adj10 (serum adj1 free)	☐
S19		USPT	(((((435/69.1, 325, 374, 375, 377, 395, 404, 405, 406, 407, 455).ccls.) or (536/23.1.ccls.)) and (embryonic adj1 stem)) and (serum adj1 free)) and (media or medium)	☐
S18		USPT	serum adj1 free	☐
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S16		USPT	(((435/69.1, 325, 374, 375, 377, 395, 404, 405, 406, 407, 455).ccls.) or (536/23.1.ccls.)) and (embryonic adj1 stem)	☐
S15		USPT	((435/69.1, 325, 374, 375, 377, 395, 404, 405, 406, 407, 455).ccls.) or (536/23.1.ccls.)	☐
S14		USPT	536/23.1.ccls.	☐
S13		USPT	(435/69.1, 325, 374, 375, 377, 395, 404, 405, 406, 407, 455).ccls.	☐
S12		ALL	(plant$1 near10 (pectinase or pectin adj1 lyase or pectolyase or polygalacturonase)) and (cosmetic$ or topical$2)	☐

S11		ALL	plant$1 near10 (pectinase or pectin adj1 lyase or pectolyase or polygalacturonase)	☐
S10		ALL	plant$1 and (pectinase or pectin adj1 lyase or pectolyase or polygalacturonase)	☐
S9		USPT	culture.clm. and kit.clm. and cell$1.clm. and container$1.clm.	☐
S8		USPT	culture.clm. and kit.clm. and cell$1.clm.	☐
S7		USPT	culture.clm. and kit.clm.	☐
S6		USPT	((435/404.ccls.) and (kit$1 or product$1)) and embryonic	☐
S5		USPT	(435/404.ccls.) and kit.clm.	☐
S4		USPT	((435/404.ccls.) and (kit$1 or product$1)) and cell$1	☐
S3		USPT	(435/404.ccls.) and (kit$1 or product$1)	☐
S2		USPT	(435/404.ccls.) and (kit$1 or product$)	☐
S1		USPT	435/404.ccls.	☐

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